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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,904	08/11/2006	Wayne M. Moreau	FIS920030012US1	7740

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INTERNATIONAL BUSINESS MACHINES CORPORATION
DEPT. 18G
BLDG. 300-482
2070 ROUTE 52
HOPEWELL JUNCTION, NY 12533

EXAMINER

LEE, SIN J

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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08/15/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,904	Applicant(s) MOREAU ET AL.	
	Examiner Sin J. Lee	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/11/06, 7/16/07, 8/29/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 11-17 have been renumbered as claims 13-19.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (US 2003/0186161 A1).

In Claim 4, Fujimori teaches a positive photoresist composition containing an acid generator, an acid-labile resin and a basic compound (C-3). As more preferred examples for such basic compound, Fujimori lists (see [0272]) thirteen examples, which include 4-dimethylaminopyridine (present room temperature solid base) and 1-naphthylamine (present low vapor pressure base). Fujimori furthermore teaches (see [0273]) that the basic compound (C-3) may be used individually or as a mixture of two or more thereof. Based on such teaching, it would have been obvious to one skilled in the art to use a mixture of 4-dimethylaminopyridine and 1-naphthylamine as Fujimori's

basic compound (C-3) with a reasonable expectation of obtaining a positive photoresist composition in which edge roughness of pattern is improved and development defect is restrained. Also, as examples for the acid-labile group of his resin, Fujimori includes a tetrahydropyranyl group as well as a tetrahydrofuryl group (see [0143]-[0144] and see also Resin (15) in Table 1). Thus, Fujimori's teaching renders obvious present inventions of claims 1-7.

4. Claims 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (US 2003/0186161 A1) in view of Koguchi et al (4,814,244).

Fujimori applies his positive photoresist composition onto a substrate. The resulting photoresist layer is exposed to light (such as KrF excimer laser beam, ArF excimer laser beam, or electron beam) through a desired mask, followed by baking and development to obtain a resist pattern. (see [0306]-[0307]). Fujimori also uses a reflection preventing film between the substrate and the photoresist layer (see [0356]). Fujimori does not explicitly state an etching step after the development or a material layer comprising a chromium-containing composition.

A resist pattern (such as Fujimori's resist pattern) is widely used in the field of semiconductor device, for example, in producing a mask for manufacturing the semiconductor device, as evidenced by Koguchi (see col.1, lines 11-20). Such mask is manufactured by (i) depositing a metal layer such as a chromium layer on a surface of a glass substrate, (ii) coating a resist film on the metal layer, (iii) imagewise exposing the resist film by an electron beam, (iv) developing the resist film to form the resist pattern, and (v) selectively etching the metal layer by using the resist pattern as an etching

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mask. It would have been obvious to one skilled in the art to use Fujimori's resist pattern in the method of producing a mask for manufacturing the semiconductor device as illustrated by Koguchi because Fujimori also states that his positive photoresist composition is used in the production process of semiconductor devices. Thus, Fujimori in view of Koguchi render obvious present inventions of claims 8-17.

5. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (US 2003/0186161 A1) in view of Momma et al (5,731,131).

As discussed above, Fujimori teaches present steps (A)-(D) in forming a resist pattern. Although Fujimori does not explicitly state present depositing step (E), a depositing step such as a chemical vapor deposition is one of the normally required semiconductor device manufacturing device processes, as evidenced by Momma, col.12, lines 22-25. Therefore, it would have been obvious to one skilled in the art to perform a depositing step such as a chemical vapor deposition after Fujimori's development step because Fujimori states that his photoresist composition is used in the production process of semiconductor devices and because a depositing step such as a chemical vapor deposition step is one of the normally required semiconductor device manufacturing device processes as evidenced by Momma. Thus, Fujimori in view of Momma render obvious present inventions of claims 18 and 19.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sin J. Lee/
Primary Examiner, Art Unit 1795
August 4, 2008